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A FRENCH TREATISE ON PHYSICAL GEOGRAPHY.

Traité de Géographie physique: Climat, Hydrographie, Relief du Sol, Biogéographie. By Prof. Emmanuel de Martonne. Pp. viii+910, and maps. (Paris: Librairie Armand Colin.) Price 22 francs.

EVERY writer of text-books is faced by the difficulty that the science of which he treats inosculates with and is overlapped by other branches of science. One of his most important tasks, therefore, consists in the exercise of a wise judgment as to what should be properly included, and what excluded, in the treatise he is preparing.

It has sometimes been suggested that all science may be regarded as falling into the two divisions geography and astronomy, the former dealing with everything that relates to our own planet, the latter with matters concerning the outside universe. But however logical such a scheme of classification of the sciences may be regarded, it cannot be commended on the score of convenience. There is no branch of physical or natural science which is not a part of "earth-knowledge," but it would be clearly impossible in a single treatise to deal with the foundations and superstructures of physics, chemistry, geology, botany, zoology, and anthropology. A work on geography must take for granted a certain amount of preliminary knowledge of science, and be contented with showing their application to the explanation of the various phenomena exhibited on the surface of the globe.

In the preface to the work before us, its author suggests as natural divisions of physical geography the following:—Morphologie, l'hydrographie, le climat, la biogéographie, et la géographie humaine; and the bulky volume now issued deals only with the first four of these divisions. The author justly remarks that it is almost impossible for any man to have a complete personal knowledge of all these subjects, but that specialisation becomes necessary; he has therefore sought and obtained assistance from various colleagues and friends in dealing with different departments of the subject.

In the first division of the work, devoted to general notions on the subject, a clear account, occupying 25 pages, is given of the history and evolution of geological science, and in this part, as in all following divisions, a very useful and complete bibliography of the subject is supplied. The question of projection is fully treated, and, for the very numerous maps of the whole globe given throughout the work, the conventional system of Molweide (or Babinet) is adopted in preference to that of Mercator, thus avoiding the extreme polar distortions of the latter system.

The 160 pages devoted to meteorology, and constituting the second division of the work, contains an excellent summary of that branch of science. The chief meteorological instruments are described, and clear statements given on the temperature, the hygroscopic characters, and the movements of the atmosphere in different areas; and the bearings of these several

factors in producing different types of climate are discussed with much skill.

The subject of hydrography has more than 100 pages devoted to it, and constitutes the third division of the book. A good *résumé* of the observations made in recent years in the deep oceans is given with abundant references, including those to the latest published works. This is followed by chapters on the movements of the oceanic water, on the lakes, and on the rivers of the globe.

The fourth part of the work, dealing with the forms of the great land masses of the globe, constitutes the largest division of the book, occupying no fewer than 340 pages. After a sketch of the methods employed in surveying and of the different ways of representing the results on maps, a list is given of the chief published topographical maps of different parts of the world. We notice here some singular omissions. The Ordnance maps of England and Wales and of Scotland, on the one-inch scale, are referred to, but there is no mention of the existence of maps on other scales, or of any of the Ordnance maps of Ireland! The maps of the trigonometrical survey of India are included, but no notice is taken of any British colony, although Algeria and Tunis receive full consideration. This is a matter which certainly calls for rectification in a future edition.

The forms of the land surfaces resulting from different kinds of erosion are dealt with somewhat fully on the lines rendered familiar by the writings of Prof. W. M. Davis. Under the title of palæogeography a chapter is devoted to the forms and dimensions of land-masses during former geological periods, and the somewhat problematical questions connected with the subject are dealt with in considerable detail. The map of "Gondwanaland" on p. 587, in which the great continent of Permo-Carboniferous times is made to include, not only India and a large part of Africa, but to extend over Australia and the western half of South America, will naturally excite criticism from those who believe in the permanence of ocean-basins; as will also the map of the world in Cenomanian times, in which, following de Lapparent, Haug, and Frech, the author represents a northern and a southern Atlantis, and, more doubtfully, a Pacific continent. The chapters on glacial and desert conditions, and the surface features resulting from them, are fully up to date, and contain much useful information of a kind not usually found in text-books.

In the 180 pages devoted to "biogeography" there is much useful information included, but opinions will differ as to how far much of this matter should legitimately form a part of a treatise on physical geography. Such subjects as commensalism in plants and animals, the fertilisation of plants, domestication and its influence, mutation and saltation—important as they undoubtedly are—seem scarcely to form a portion of geographical science, and if they are included it is difficult to understand why many similar questions are omitted.

Apart from this difficult question of the limits which the author should adopt for his subject, the work before us is a mine of information, and especial praise

must be given to the great wealth of useful illustrations it contains. These include 396 figures and maps in the text, 48 plates with very beautiful photographs of scenery, &c., and two folding coloured maps.

J. W. J.

THE PREHISTORIC EVOLUTION OF ITALY.
The Stone and Bronze Ages in Italy and Sicily. By T. Eric Peet. Pp. 528; maps and plates. (Oxford : Clarendon Press, 1909.) Price 16s. net.

THIS book gives a clear and exhaustive description of the results of the numerous excavations made by Italian archæologists and a critical discussion of the material obtained. The author succeeds in giving a remarkably complete record of the evolution of culture in Italy from the Palæolithic age down to the Iron age. In arriving at his conclusions he relies almost entirely on technological data, which, though of great value in determining the state of culture of the peoples with which he deals, are of much less value than the data of physical anthropology in solving racial problems. Large numbers of skeletons appear to have been discovered in the immense number of tombs that have been investigated by the Italian archæologists, but only in two or three cases does the author give us the measurements of these skeletons. As a result, many problems have to be left unsolved which with the assistance of physical data would apparently be easily soluble. For instance, a type of Neolithic pottery is found in a cave at Villafraiti, in north Sicily, which differs from the Neolithic types found in other parts of the island, and has analogies with pottery found in certain neighbouring countries. The author is unable to decide whether this pottery was introduced by the immigration of a new race or by trade intercourse with foreign countries. He appears to have overlooked the important fact, mentioned by him in a footnote, that four skulls having an average index of 82·2 were found in the same cave as the new type of pottery. Knowing that the average index of the ancient Mediterranean race is 74·75, the physical anthropologist would have no hesitation in saying that the probability was immensely in favour of the new type of pottery being introduced into Sicily by the immigration of a new race.

The difference in the technique of the Neolithic implements and pottery in north and south Italy leads the author to the conclusion that the populations of these regions were two branches of the Mediterranean race who arrived in Italy by different routes. The southern branch almost certainly came by sea from Crete; about the route of the northern branch there is not the same certainty. Towards the end of the Neolithic period, pottery of the "dolmen" type appeared in south Italy, north Sicily, and Sardinia, and superseded the older types.

In the period coming after the Neolithic, which the author, following the Italian archæologists, calls the Eneolithic period, copper makes its appearance alongside of stone. The rock-hewn tomb is introduced in south Italy and Sicily, and a great advance takes place in the technique of stone implements. Several

new types of pottery appear. One of these is distinctly Aegean, so there can be no doubt that there was trade intercourse in the Eneolithic period between Crete and south Italy and Sicily.

A remarkable type of pottery occurs in the early Eneolithic period in south-west Sicily in association with rock-hewn tombs. The ornamentation consists of rectilinear patterns painted in black on a ground of "white slip," with which the clay pot is coated. The distribution of this pottery is interesting; it is not found in Crete, but it has been found in Thessaly and in other parts of north Greece; fragments have also been found at Molfetta, in Apulia, south Italy. It looks, therefore, that there was a second route of trade or of migration from the east, across north Greece, the Adriatic, and south Italy to Sicily, which is quite distinct from the Aegean sea route along which the greater part of the trade of south Italy with the east, passed.

The author leans to the view that the great cultural changes of the Eneolithic period were not due to the immigration of a new race, but to foreign influence. Measurements of skulls found associated with the "painted white slip" ware might possibly change this opinion. The average cephalic index of four skulls found at Castelluccio with this ware was 77·9, which looks significantly higher than that of the Mediterranean race.

The Bronze age in Italy is treated topographically. A very painstaking and up-to-date description is given of the material found in the lake dwellings, in the Terremare, and in Bronze-age hut-settlements and caves of north Italy. Chapters are then devoted to the Bronze age in south Italy, and to the Bronze age in Sicily and Sardinia.

In a chapter on the racial problem, the author deals with the racial affinities and origins of the peoples who introduced bronze into Italy. There are two theories in the field, that of Brizio and that of Pigorini. The author favours the latter. According to Pigorini's theory, the hut villages and caverns of the Neolithic age in north Italy were inhabited by a dolichocephalic race (called usually *Ibero-Liguri*) who inhumed their dead. At the end of the Neolithic period a new race appeared in north Italy which cremated its dead. This race planted the first lake dwellings in Lombardy. In the full Bronze age another branch of the same race invaded the eastern district of north Italy, and planted the lake dwellings of the Veneto and the Terremare of Emilia. At the end of the Bronze age, part of the new people crossed the Apennines and entered Tuscany and Latium. This new people Pigorini calls the *Italici*. He considers that they were of the same race as the Swiss lake dwellers, and therefore probably brachycephalic. There is no direct evidence of this, as cremation was an invariable burial custom among the Italian like dwellers and the Terremare folk.

The volume is well printed, contains many excellent illustrations, and four valuable maps showing the distribution of sites in the Neolithic, Eneolithic, and Bronze ages. No student of the prehistory of man in Italy, or indeed in Europe, can dispense with read-